WHAT IS CLAIMED IS:

1. Modified brown rice in which an epidermal layer of brown rice is polished to remove pericarp and also partially remove seed coat under the pericarp, thereby partially exposing tubular cell tissues covered with the seed coat on the surface of brown rice.

2. The modified brown rice of Claim 1; wherein polishing the epidermal layer of brown rice is attained by a brown rice treating apparatus, comprising a polishing drum with a supplying port of brown rice on one end and a discharge port of brown rice on the other end, and an axial-type polishing roll which rotates inside the polishing drum, and the surface of the polishing roll is at least partially provided with spiral protrusions to which polishing carbide abrasive grains such as diamond, sapphire or zirconia ceramic are fixed, and having such a structure that while brown rice grains introduced from the supplying port into the polishing drum are transported by the spiral protrusions of the polishing roll toward the discharge port, polishing and grinding can be given only to the epidermal layer of brown rice.

3. The modified brown rice of either Claim 1 or 2, wherein oil components in tubular cell tissues are removed to give a hollow state therein.

4. The modified brown rice of Claim 3; wherein oil components in tubular cell tissues are removed to attain hollowing in the tube by using a wash-free rice producing apparatus comprising a pressurizing stir means, a rinsing dehydration means and an evaporation means in the wash-free rice producing apparatus,

said pressurizing stir means has a water-pouring port for adding washing water to white rice and houses a stir roll provided with the spiral

protrusions on the circumference surface rotatable in a freely driven mode inside a stirring drum provided with a receiving port for white rice on one end and a discharge port on the other end;

said rinsing dehydration means is rotatable in a freely driven mode provided with a centrifugal dehydration chamber provided with a porous circumference wall, in which a screw drum is provided coaxially with the centrifugal dehydration chamber and rotatable in a freely driven mode in relation to the centrifugal dehydration chamber, and a rice supplying tube for supplying white rice from the pressurizing stir means into the screw drum is passed through the screw drum, and said rinsing dehydration has a rice pouring port for pouring the white rice supplied from the rice supplying tube toward the circumference wall of the centrifugal dehydration chamber, a screw blade for transporting the white rice poured from the rice pouring port axially along the circumference wall of the centrifugal dehydration chamber, and a rinsing-water pouring port for pouring rinsing water toward the white rice transported by the screw blade;

and said evaporation means is provided with a net rotatable in a freely driven mode so that the white rice from the rinsing dehydration means can be scattered on the net and also has an inhalation blower for inhaling air below the net.

5. A method for producing modified brown rice, comprising the steps of;

giving an oppression state and a release state sequentially to brown rice in a space to transport brown rice in a given direction in the space, polishing quite thinly the surface of brown rice accumulated densely in the oppression state and mutually arranged in a longitudinal direction of the grain, and then polishing quite thinly the surface of brown rice, the position relation of

which is mutually changed in the release state while the oppression is again given to cause a dense arrangement of brown rice, wherein these steps are repeated to remove the pericarp and also partially remove the seed coat under the pericarp, thereby partially exposing the tubular cell tissues covered with the seed coat to the surface of brown rice.

6. The method for producing modified brown rice of Claim 5, polishing the epidermal layer of brown rice comprising the steps of:

supplying brown rice to the polishing drum provided with the supplying port of brown rice on one end and the discharge port of brown rice on the other end and also provided with the axial-type polishing roll which rotates therein;

polishing the epidermal layer of brown rice by the use of polishing carbide abrasive grains such as diamond, sapphire or zirconia ceramic fixed on the surface of the spiral protrusions mounted on said polishing roll; and while exposing the tubular cell tissues covered with the epidermal layer to the surface of brown rice, transporting the brown rice grains introduced from the supplying port into the polishing drum to the discharge port by using the spiral protrusions of the polishing roll.

7. The method for producing modified brown rice of either Claim 5 or 6, wherein oil components in tubular cell tissues which are partially or totally exposed to the surface of brown rice are further removed to attain hollowing therein.

8. The method for producing modified brown rice of Claim 5; wherein oil components in tubular cell tissues are removed to attain hollowing therein by using a wash-free rice producing apparatus comprising a pressurizing stir means, a rinsing dehydration means and an evaporation means, and more particularly, in the wash-free rice producing apparatus,

said pressurizing stir means has a water-pouring port for adding washing water to white rice and houses a stir roll provided with the spiral protrusions on the circumference surface rotatable in a freely driven mode inside a stirring drum provided with a receiving port for white rice on one end and a discharge port on the other end;

said rinsing dehydration means is rotatable in a freely driven mode provided with a centrifugal dehydration chamber provided with a porous circumference wall, in which a screw drum is provided coaxially with the centrifugal dehydration chamber and rotatable in a freely driven mode in relation to the centrifugal dehydration chamber, and a rice supplying tube for supplying white rice from the pressurizing stir means into the screw drum is passed through the screw drum, and said rinsing dehydration has a rice pouring port for pouring the white rice supplied from the rice supplying tube toward the circumference wall of the centrifugal dehydration chamber, a screw blade for transporting the white rice poured from the rice pouring port axially along the circumference wall of the centrifugal dehydration chamber, and a rinsing-water pouring port for pouring rinsing water toward the white rice transported by the screw blade;

and said evaporation means has a net rotatable in a freely driven mode so that the white rice from the rinsing dehydration means can be scattered on the net and also has an inhalation blower for inhaling air below the net.